

DOCKET NO. D-1971-078 CP-3

DELAWARE RIVER BASIN COMMISSION

Discharge to a Tributary of Special Protection Waters

**City of Bethlehem
Waste Water Treatment Plant Expansion
Bethlehem City, Northampton County, Pennsylvania**

PROCEEDINGS

This docket is issued in response to an Application submitted to the Delaware River Basin Commission (DRBC or Commission) by ARCADIS-US, Inc. on behalf of the City of Bethlehem on October 2, 2012 (Application), for renewal of an existing wastewater treatment plant (WWTP) discharge and to approve combined sewer overflow (CSO) improvements both proposed and already performed at the WWTP. National Pollutant Discharge Elimination System (NPDES) Permit No. PA0026042 for the project was approved by the Pennsylvania Department of Environmental Protection (PADEP) on November 10, 2008. The PADEP issued Water Quality Management (WQM) Permit No. 4811401 for these projects on April 14, 2011.

The Application was reviewed for continuation of the project in the Comprehensive Plan and approval under Section 3.8 of the *Delaware River Basin Compact*. The Lehigh Valley Planning Commission has been notified of pending action. A public hearing on this project was held by the DRBC on December 5, 2012.

A. DESCRIPTION

1. Purpose. The purpose of this docket is to renew approval of the existing 20.0 million gallons per day (mgd) City of Bethlehem WWTP and its related discharge. Additionally the docket holder has performed CSO improvements since the last docket approval in October 2009 and proposes multiple other CSO improvements over the next decade. This docket will approve prior work at the facility and conditionally approve the proposed CSO improvements as described in Section A.4.b. of this docket. This docket does not approve an increase to the existing dry weather design capacity of the WWTP.

2. Location. The existing WWTP will continue to discharge treated effluent primarily to the Lehigh River at River Mile 183.66 – 9.51 (Delaware River – Lehigh River). Additionally, Outfall No. 006 now acts as an emergency outfall to discharge treated effluent and is located at River Mile 183.66 – 9.5 – 0.3 (Delaware River – Lehigh River – Saucon Creek). The existing WWTP and its related outfalls are located in the drainage area to the Lower Delaware Special Protection Waters (SPW), in the City of Bethlehem, Northampton County, Pennsylvania as follows:

OUTFALL NO.	LATITUDE (N)	LONGITUDE (W)
001 (WWTP)	40° 37' 11"	75° 20' 12"
006 (Emergency)	40° 37' 06"	75° 20' 02"

3. Area Served. The service area for the WWTP includes the following municipalities located within Pennsylvania:

MUNICIPALITY	COUNTY
City of Allentown (portions)	Lehigh
Fountain Hill Borough	Lehigh
Salisbury Township	Lehigh
Hanover Township	Lehigh & Northampton
Lower Saucon Township	Northampton
Hellertown Borough	Northampton
Palmer Township	Northampton
Bethlehem Township	Northampton
Lower Nazareth Township	Northampton
Borough of Freemansburg	Northampton

For the purpose of defining the Area Served, Section B (Type of Discharge) and D (Service Area) of the docket holder's Application are incorporated herein by reference, to the extent consistent with all other conditions contained in the DECISION Section of this docket.

4. Physical Features.

a. Design Criteria. The docket holder operates an existing 20.0 mgd WWTP. CSO improvements that are proposed and have been performed will increase the wet weather hydraulic capacity to 50.0 mgd. The four (4) proposed projects include digester/waste activated sludge improvements, effluent pump station capacity upgrades, dewatering improvements, and the relocation of existing Outfall No. 004 from Saucon Creek to the Lehigh River and its being renamed to Outfall No. 012. The docket holder has already replaced the mechanical aerators within each of the ten (10) treatment tanks in-kind.

b. Facilities. The existing WWTP consists of a bar screen, two (2) primary clarifiers, three (3) aeration tanks, two (2) intermediate clarifiers, four (4) trickling filters, two (2) final clarifiers, two (2) primary digesters, two (2) secondary digesters, a sludge thickener, and three (3) chlorine contact tanks.

In addition, there are six pump stations owned and operated by the docket holder that contribute to the flow at the Bethlehem WWTP. Those six pump stations are located on Airport Road, Applebutter Road, Brighton Street, Langhorne Avenue, Conestoga Street, and LVIP Easton Road.

The following improvements are under way or are anticipated through the life of this docket:

- **2012**
 - Digester/Waste Activated Sludge Thickening Improvements (initiated and under construction)
 - Effluent Pump Station Capacity Upgrade (design initiated)
 - Dewatering Improvements (design initiated)
- **2013**
 - CSO Relocation (Outfall No. 012) to Lehigh River per Long Term Control Plan recommendations
 - Digester/Waste Activated Sludge Thickening Improvements (ongoing construction)
 - Effluent Pump Station Capacity Upgrade (construction initiated)
 - Dewatering Improvements (construction initiated)
- **2014**
 - Digester/Waste Activated Sludge Thickening Improvements (anticipated completion)
 - Effluent Pump Station Capacity Upgrade (anticipated completion)
 - Dewatering Improvements (ongoing construction)
- **2015**
 - Dewatering Improvements (anticipated completion)

The docket holder's wastewater treatment facility discharges to waters classified as SPW and is required to have available emergency power. The existing WWTP has a generator installed capable of providing emergency power. (SPW)

The docket holder's wastewater treatment facility is not staffed 24 hours per day, and shall have a remote alarm system that continuously monitors plant operations. The existing WWTP has a remote alarm system installed that continuously monitors plant operations. (SPW)

The docket holder's existing wastewater treatment facility has prepared and implemented an emergency management plan (EMP) in accordance with Commission requirements. (SPW)

The work proposed and previously performed pertaining to CSO flow treatment does not meet the Commission's definition of Substantial Alterations or Additions [See Section 3.10.3A.2.16) of the Commission's *Water Quality Regulations (WQR)*] because the work is for wet weather flow treatment. Therefore, the docket holder was not required to perform a No Measurable Change (NMC) to Existing Water Quality (EWQ) analysis or natural treatment alternatives (NTA) analysis. (SPW)

The project facilities are located in the flood fringe portion of the 100-year floodplain. The docket holder has flood-proofed the facilities at least one (1) foot above the 100-year flood elevation.

Wasted sludge will continue to be hauled off-site by a licensed hauler for disposal at a (State-approved) facility.

c. **Water withdrawals.** The potable water supply in the project service area is supplied by the three surface water intakes at Wild Creek and Penn Forest Reservoirs with a back up supply from Tunkhannock Creek as well as four wells, which are described in detail in Dockets Nos. D-65-80 CP (Revised), D-66-52 CP, D-70-230 CP, and D-95-19 CP, which were approved on December 29, 1965, April 27, 1966, December 17, 1970, and April 30, 1997, respectively. Decision Condition II.x. of this docket requires the docket holder to submit an application to the Commission to revise the above referenced dockets to reflect the new state permitted withdrawal of 42 mgd, instead of the total docketed 32.5 mgd, within 60 days of approval of this docket (by February 3, 2013).

d. **NPDES Permit / DRBC Docket.** NPDES Permit No. PA0026042 was approved by the PADEP on November 10, 2008 and includes final effluent limitations for the project discharge of 20.0 mgd to surface waters classified by the PADEP as a Warm Water Fishery (WWF). Renewal of the NPDES Permit is expected in 2013 and no significant modifications are expected. The following average monthly effluent limits are among those listed in the NPDES Permit and meet or are more stringent than the effluent requirements of the DRBC.

EFFLUENT TABLE A-1: DRBC Parameters Included in NPDES Permit

OUTFALLS 001 & 006 (WWTP)		
PARAMETER	LIMIT	MONITORING
pH (Standard Units)	6 to 9 at all times	As required by NPDES permit
Total Suspended Solids	30 mg/l	As required by NPDES permit
CBOD (5-Day at 20° C)	25 mg/l (85% minimum removal*)	As required by NPDES permit
Ammonia Nitrogen (5-1 to 10-31) (11-1 to 4-30)	5.0 mg/l 15.0 mg/l	As required by NPDES permit
Fecal Coliform (5-1 to 9-30) (10-1 to 4-30)	200 colonies per 100 ml 2000 colonies per 100 ml	As required by NPDES permit

* DRBC Requirement

EFFLUENT TABLE A-2: DRBC Parameters Not Included in NPDES Permit

OUTFALLS 001 & 006 (WWTP)		
PARAMETER	LIMIT	MONITORING
Total Dissolved Solids*	1,000 mg/l *	Quarterly **
Total Phosphorus*	Monitor & Report *	Monthly *
Nitrate as N*	Monitor & Report *	Monthly *
Total Nitrogen*	Monitor & Report *	Monthly *

* DRBC Requirement

** See DECISION Condition II.u.

e. Cost. The overall cost of the five past, present, and future projects is estimated to be \$25,939,340 (See DECISION Condition II.k.).

f. Relationship to the Comprehensive Plan. The City of Bethlehem's WWTP was included in the Comprehensive Plan as part of Addendum No. 1, adopted on July 25, 1962. The expansion of the WWTP to 15.5 mgd and its continuation in the Comprehensive Plan was approved by Docket No. D-71-78 CP on June 22, 1971. The expansion to 20.0 mgd and its continuation in the Comprehensive Plan was approved by Docket No. D-1971-078 CP-2 on October 22, 2009. Issuance of this docket will continue approval of the 20.0 mgd City of Bethlehem WWTP in the Comprehensive Plan (See DECISION Condition I.c.).

B. FINDINGS

The purpose of this docket is to renew approval of the existing 20.0 mgd City of Bethlehem WWTP and its related discharge. Additionally the docket holder has performed CSO improvements since the last docket approval in October 2009 and proposes multiple other CSO improvements over the next decade. This docket will approve prior work at the facility and conceptually approve the proposed CSO improvements.

On July 16, 2008, the DRBC approved amendments to its *WQR* that provide increased protection for waters that the Commission classifies as SPW. The portion of the Delaware River and its tributaries within the boundary of the Lower Delaware River Management Plan Area was approved for SPW designation. (Lower SPW)

Article 3.10.3A.2.e.1). and 2). of the Commission's *WQR*, states that projects subject to review under Section 3.8 of the Compact that are located in the drainage area of SPW must submit for approval a Non-Point Source Pollution Control Plan (NPSPCP) that controls the new or increased non-point source loads generated within the portion of the applicant's service area which is also located within the drainage area of SPW. The service area of the docket holder is located within in the drainage area to the SPW. Since this project does not entail additional expansion of the service area (i.e., there are no new or increased non-point source loads associated with this approval), the NPSPCP requirement is not applicable at this time. Accordingly, DECISION Condition II.q. has been included in this docket.

The aerator replacement in-kind work performed by the docket holder between 2009 and the present meets the Commission's definition of substantial alterations or additions and if the work was being performed to treat dry weather flows instead of wet the docket holder would have been required to perform both a NMC to EWQ analysis and a NTA analysis. However, since the work is being performed to provide treatment for wet weather flows the work is not considered to be a substantial alteration or addition in accordance with Section 3.10.3A.2.a.16) of the Commission's *WQR*. As such, the docket holder is not required to perform a NMC to EWQ analysis nor a NTA analysis. In a letter dated December 14, 2009 the Commission acknowledged that the aerator work was for wet weather flow purposes and at that time made the determination that the work would not result in substantial alterations or additions being performed and that the docket holder would not be required to perform a NMC to EWQ analysis nor a NTA analysis. Should the docket holder propose to do work outside the scope approved by this docket in the future, the docket holder must first ascertain approval by the Commission prior to final design to ensure that certain SPW requirements such as a NMC to EWQ analysis and NTA analysis are performed if applicable (See DECISION Condition II.w.).

Grandfathered Loads

The City of Bethlehem WWTP's grandfathered loads are located in Table B-1 below. The Application included discharge data from 2000-2004 and 2009-2012. Between these data sets Commission staff confirmed grandfathered loads already assumed in prior Lehigh River Water Quality Model (LR-WQM) iterations and developed several new ones based upon actual discharge data collected and submitted by the docket holder.

Table B-1: City of Bethlehem's Grandfathered Loads

	FLOW (mgd)	TSS (lbs/day)	TP (lbs/day)	Nitrate –N (lbs/day)	TN (lbs/day)	Ammonia – N (lbs/day)
May-Sept.	12.31*	700*	279**	1,034**	1,745**	129*
Oct.-April	13.08*	906*	358**	1,279**	2,274**	336*

* As reported by docket holder from 2000-2004 discharge data

** Calculated Loadings using data set from 2009-2012 and weighted with 2000-2004 flows

Other

At the project site, the Lehigh River has an estimated seven-day low flow with a recurrence interval of ten years of 208.76 mgd (323 cfs). The ratio of this low flow to the maximum design dry weather wastewater discharge from the 20.0 mgd Bethlehem WWTP is 10.4 to 1.

The nearest surface water intake of record for public water supply downstream of the project discharge is performed by the North Penn Water Authority, 35.5 miles away, approved by the DRBC via Docket No. D-1992-044 CP-3 on December 7, 2005.

The project does not conflict with the Comprehensive Plan and is designed to prevent substantial adverse impact on the water resources related environment, while sustaining the current and future water uses and development of the water resources of the Basin.

The limits in the NPDES Permit are in compliance with Commission effluent quality requirements, where applicable.

The project is designed to produce a discharge meeting the effluent requirements as set forth in the Commission's *WQR*.

D. DECISION

I. Effective on the approval date for Docket No. D-1971-078 CP-3 below:

a. The project described in Docket No. D-1971-078 CP-2 is removed from the Comprehensive Plan to the extent that it is not included in Docket No. D-1971-078 CP-3; and

b. Docket No. D-1971-078 CP-2 is terminated and replaced by Docket No. D-1971-078 CP-3; and

c. The project and the appurtenant facilities described in Section A "Physical Features" of this docket shall be added to the Comprehensive Plan.

II. The project and appurtenant facilities as described in Section A "Physical Features" of this docket are approved pursuant to Section 3.8 of the *Compact*, subject to the following conditions:

a. Docket approval is subject to all conditions, requirements, and limitations imposed by the PADEP in its NPDES and WQM Permits, and such conditions, requirements, and limitations are incorporated herein, unless they are less stringent than the Commission's.

b. The facility and operational records shall be available at all times for inspection by the DRBC.

c. The facility shall be operated at all times to comply with the requirements of the Commission's *WQR*.

d. The docket holder shall comply with the requirements contained in the Effluent Tables in Section A.4.d. of this docket. The docket holder shall submit the required monitoring results directly to the DRBC Project Review Section. The monitoring results shall be submitted annually, absent any observed limit violations, by January 31. If a DRBC effluent limit is violated, the docket holder shall submit the result(s) to the DRBC within 30 days of the violation(s) and provide a written explanation that states the action(s) the docket holder has taken to correct the violation(s) and protect against any future violations.

e. Except as otherwise authorized by this docket, if the docket holder seeks relief from any limitation based upon a DRBC water quality standard or minimum treatment requirement, the docket holder shall apply for approval from the Executive Director or for a docket revision in accordance with Section 3.8 of the *Compact* and the *Rules of Practice and Procedure*.

f. If at any time the receiving treatment plant proves unable to produce an effluent that is consistent with the requirements of this docket approval, no further connections shall be permitted until the deficiency is remedied.

g. Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project.

h. The discharge of wastewater shall not increase the ambient temperatures of the receiving waters by more than 5°F, nor shall such discharge result in stream temperatures exceeding 87°F.

i. Sound practices of excavation, backfill and reseedling shall be followed to minimize erosion and deposition of sediment in streams.

j. Within 10 days of the date that construction of the project has started, the docket holder shall notify the DRBC of the starting date and scheduled completion date.

k. Within 30 days of completion of construction of the approved project, the docket holder is to submit to the attention of the Project Review Section of DRBC a Construction Completion Statement (“Statement”) signed by the docket holder’s professional engineer for the project. The Statement must (1) either confirm that construction has been completed in a manner consistent with any and all DRBC-approved plans or explain how the as-built project deviates from such plans; (2) report the project’s final construction cost as such cost is defined by the project review fee schedule in effect at the time the application was made; and (3) indicate the date on which the project was (or is to be) placed in operation. In the event that the final project cost exceeds the estimated cost used by the docket holder to calculate the DRBC project review fee, the statement must also include (4) the amount of any outstanding balance owed for DRBC review. The outstanding balance will equal the difference between the fee paid to the Commission and the fee calculated on the basis of the project’s final cost, using the formula and definition of “project cost” set forth in the DRBC’s project review fee schedule in effect at the time application was made.

l. The docket holder is permitted to treat and discharge wastewaters as set forth in the Area Served Section of this docket, which incorporates by reference Sections B (Type of Discharge) and D (Service Area) of the docket holder’s Application to the extent consistent with all other conditions of this DECISION Section.

m. The docket holder shall make wastewater discharge in such a manner as to avoid injury or damage to fish or wildlife and shall avoid any injury to public or private property.

n. No sewer service connections shall be made to newly constructed premises with plumbing fixtures and fittings that do not comply with water conservation performance standards contained in Resolution No. 88-2 (Revision 2).

o. Nothing in this docket approval shall be construed as limiting the authority of DRBC to adopt and apply charges or other fees to this discharge or project.

p. The issuance of this docket approval shall not create any private or proprietary rights in the waters of the Basin, and the Commission reserves the right to amend, suspend or rescind the docket for cause, in order to ensure proper control, use and management of the water resources of the Basin.

q. Prior to allowing connections from any new service areas or any new developments, the docket holder shall either submit and have approved by the Executive Director of the DRBC a NPSPCP in accordance with Section 3.10.3.A.2.e, or receive written confirmation from the Executive Director of the DRBC that the new service area is in compliance with a DRBC approved NPSPCP.

r. Unless an extension is requested and approved by the Commission in advance, in accordance with paragraph 11 of the Commission's Project Review Fee schedule (Resolution No. 2009-2), the docket holder is responsible for timely submittal of a docket renewal application on the appropriate DRBC application form at least 12 months in advance of the docket expiration date set forth below. The docket holder will be subject to late charges in the event of untimely submittal of its renewal application, whether or not DRBC issues a reminder notice in advance of the deadline or the docket holder receives such notice. In the event that a timely and complete application for renewal has been submitted and the DRBC is unable, through no fault of the docket holder, to reissue the docket before the expiration date below (or the later date established by an extension that has been timely requested and approved), the terms and conditions of the current docket will remain fully effective and enforceable against the docket holder pending the grant or denial of the application for docket approval.

s. The Executive Director may modify or suspend this approval or any condition thereof, or require mitigating measures pending additional review, if in the Executive Director's judgment such modification or suspension is required to protect the water resources of the Basin.

t. Any person who objects to a docket decision by the Commission may request a hearing in accordance with Article 6 of the Rules of Practice and Procedure. In accordance with Section 15.1(p) of the Delaware River Basin Compact, cases and controversies arising under the Compact are reviewable in the United States district courts.

u. The docket holder may request of the Executive Director in writing the substitution of specific conductance for TDS. The request should include information that supports the effluent specific correlation between TDS and specific conductance. Upon review, the Executive Director may modify the docket to allow the substitution of specific conductance for TDS monitoring.

v. The docket holder is prohibited from treating/pre-treating any hydraulic fracturing wastewater from sources in or out of the Basin at this time. Should the docket holder wish to treat/pre-treat hydraulic fracturing wastewater in the future, the docket holder will need to first apply to the Commission to renew this docket and be issued a revised docket allowing such treatment and an expanded service area. Failure to obtain this approval prior to treatment/pre-treatment will result in action by the Commission.

w. Should the docket holder propose to do work outside the scope approved by this docket in the future, the docket holder must first ascertain approval by the Commission prior to final design to ensure that certain SPW requirements such as a NMC to EWQ analysis and NTA analysis are performed should the Commission deem the proposed work meets the definition of substantial alterations or additions.

x. Final Plans and Specifications for each of the proposed conceptual projects not already submitted as part of the Application must be submitted to the Executive Director for review and approval prior to construction to ensure the design conforms with the Commission's requirements.

y. The docket holder must submit an application to the Commission to revise and combine the four previously approved water withdrawal dockets as described in Section A.4.c. of this docket within 60 days of approval of this docket (by February 3, 2013).

BY THE COMMISSION

DATE APPROVED: December 5, 2012

EXPIRATION DATE: November 30, 2018